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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BRUNO GIBELLO

Appeal 2008-2160
Application 09/926,415
Technology Center 1700

Decided: August 12, 2008

Before CHARLES F. WARREN, THOMAS A. WALTZ, and CATHERINE Q. TIMM, *Administrative Patent Judges*.

WALTZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Primary Examiner's final rejection of claims 1, 2, 6, 7, 11, 15, 19, 22, 24, 26, and 28, which are the only claims pending in this application (*see* the amendments dated Oct. 5, 2005, and Nov. 15, 2005, both subsequent to the Final Rejection, entered as per the Advisory Actions dated Oct. 18, 2005, and Nov. 28, 2005, respectively; App. Br. 1-3).[1] We have jurisdiction pursuant to 35 U.S.C. § 6(b).

[1] We refer to and cite from the "**CORRECTED APPEAL BRIEF**" dated Aug. 21, 2006.

According to Appellant, the invention is directed to a process for manufacturing a continuous yarn comprising the steps of drawing a multiplicity of streams of molten material to form a multiplicity of continuous filaments, gathering the multiplicity of filaments into a yarn with a wheel, and monitoring a position of the wheel to determine whether a tension exerted by the multiplicity of the filaments falls below a predetermined tension to detect breakage of at least one filament before breakage of the entire yarn (App. Br. 3). Independent claims 1 and 19 are illustrative of the invention and a copy of these claims is reproduced below:

1. Process for manufacturing a continuous yarn comprising:
drawing a multiplicity of streams of molten material to form a multiplicity of continuous filaments;
gathering the multiplicity of the filaments into the yarn with a wheel;
and monitoring a position of the wheel to determine whether a tension exerted by the multiplicity of the filaments falls below a predetermined tension to detect breakage of at least one filament before breakage of the entire yarn.

19. A method [sic, of] determining breakage of at least one filament of a yarn:
gathering a plurality of filaments into the yarn with a wheel;
and monitoring a movement of the wheel to determine whether the at least one filament has broken before breakage of the entire yarn.

The Examiner has relied on the following prior art references as evidence of obviousness:

Underwood	3,467,739	Sep. 16, 1969
Minkler	3,560,178	Feb. 2, 1971
Harrill	3,844,497	Oct. 29, 1974
Arterburn	5,935,289	Aug. 10, 1999

ISSUE ON APPEAL

Claims 1, 2, 6, 7, 11, 15, 19, 22, 24, 26, and 28 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Minkler in view of Harrill, Underwood, and Arterburn (Ans. 5).[2]

Appellant contends that all of the applied references fail to teach or suggest the last clause of claims 1 and 19, namely the monitoring step (App. Br. 4-5).[3]

Appellant contends that Minkler not only fails to teach or suggest that a breakage of at least one filament is detected before the breakage of the entire yarn, but this reference also fails to teach or suggest monitoring the position of the wheel to determine whether a tension exerted by the multiplicity of filaments falls below a predetermined tension, as required by claims 1 and 19 (App. Br. 5). In contrast, Appellant contends that Minkler teaches that the shoe 16 merely displaces itself laterally after the entire strand is torn, i.e., after there is no tension at all (*id.*). Therefore, Appellant contends that Minkler "teaches away" from the claimed invention because Minkler's motor is only interrupted when the entire strand is detected to be broken (App. Br. 6).

Appellant contends that Harrill teaches detecting the breakage of a number of filaments, rather than breakage of the entire strand, but such

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[2] We refer to and cite from the Examiner's Answer dated Jul. 5, 2007. We note that Fulk, US 3,847,579, has been withdrawn from the references applied by the Examiner in this rejection (Ans. 3, ¶ (6)). We also note that Appellants incorrectly have included claims 25 and 27 in the ground of rejection to be reviewed on appeal (App. Br. 4). Claims 25 and 27 were canceled by amendment after the final rejection (App. Br. 2).

[3] Appellant presents arguments reasonably specific only to independent claims 1 and 19 (App. Br. 5-10). Therefore, we limit our consideration to these claims. *See* 37 C.F.R. § 41.37(c)(1)(vii).

detection is done in an entirely different way than claimed, i.e., by detecting an airflow (App. Br. 7). Appellant further contends that Underwood teaches that the phase angle of the motor's supplying current changes if there is a partial or complete strand breakout, but this is not monitoring of a position or movement of a wheel as required by the claims on appeal (*id.*). Finally, Appellant contends that Arterburn merely describes a part of the problem that Appellant's invention is trying to solve, and is concerned with the process of restarting the fiberizing machines after the fibers are broken (App. Br. 8).

The Examiner contends that Minkler discloses the basic claimed process with detection when no fibers contact the shoe/wheel but is silent as to what happens when only a portion of the filaments are broken (Ans. 5). The Examiner further contends that Harrill, Underwood, and Arterburn all teach use of a sensor in similar processes to detect breakage of only a portion of the strands (Ans. 6 and 8-9).

Accordingly, we determine the following issue presented from the record in this appeal: has Appellant established that the Examiner committed reversible error in determining that Harrill, Underwood, and Arterburn would have suggested monitoring the tension of the wheel in the process of Minkler to detect partial breakage of the strands?

From the record in this appeal, we determine that the Examiner has properly established a prima facie case of obviousness, which prima facie case has not been adequately rebutted by Appellant's arguments. Therefore, we AFFIRM the sole ground of rejection presented for review in this appeal, essentially for the reasons stated in the Answer as well as those reasons set forth below.

OPINION

We determine the following Factual Findings from the record presented in this appeal:

(1) Minkler discloses a process for manufacturing a continuous yarn comprising drawing a multiplicity of streams of molten material to form a multiplicity of continuous filaments, gathering the multiplicity of filaments into the yarn with a wheel, and monitoring the position of the wheel to determine whether no fibers contact the wheel, i.e., detecting when all the filaments are broken (Ans. 5; Minkler, Fig. 1; Abstract; col. 1, ll. 25-32, 41-57, and 68-72; col. 2, ll. 15-23, 31-39, and 66-col. 3, l. 2);

(2) Harrill discloses a system for stopping the forming winder collet in a glass filament package winding machine in the event of strand breakage, including the use of a strand sensor, while teaching the importance of promptly detecting strand breakage (Ans. 6; Harrill, Abstract; Fig. 1; col. 1, ll. 5-27, 35-46, and 54-67; col. 2, ll. 3-14 and 33-34; col. 3, ll. 10-16 and 47-50; col. 4, ll. 6-20; col. 5, ll. 35-39; and col. 7, ll. 4-8 and 16-19);

(3) Harrill teaches that the sensor of his invention may also respond to the breakage of a number of filaments, rather than only to the breakage of the strand (Ans. 6; Harrill, col. 7, ll. 44-55);

(4) Arterburn teaches, in an apparatus for automatic glass fiber manufacture, the problem of fiber breakage, including even one fiber, and that bushing breakout (at least twenty fibers broken) detection means are known in the art, tied into a control system

(Ans. 6; Arterburn, Abstract; col. 1, ll. 54-58; and col. 3, ll. 22-25);

(5) Underwood discloses the manufacture of continuous yarn, while teaching the problem of "breakout," including the breakage of the strand or just several filaments (Ans. 6; Underwood, col. 1, ll. 50-54 and 60-63);

(6) Underwood discloses the solution to this problem, namely detectors or sensors to sense and control the speed of the collector wheel, where the electrically actuated sensor is responsive to a reduction in the load or phase change of the motor of the attenuating unit (Underwood, col. 2, ll. 24-27 and 54-56; col. 3, ll. 14-21; col. 5, ll. 60-65; col. 11, ll. 24-26); and

(7) Underwood teaches that the sensor device is sensitive to only a few filaments breaking, and the load on the motor is provided by the tension in the pulling strand, which tension is modified by partial or complete breakout of the filaments/strand; the load is directly related to the tension, and reduction in load on the motor reduces current input and effects a phase change affecting the detector (Underwood, col. 5, ll. 49-59; col. 7, ll. 18-21; col. 8, ll. 5-10, 36-39, and 49-52; col. 9, ll. 34-38 and 59-67).

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations, if any. *See Graham v. John Deere Co.,* 383 U.S. 1, 17-18 (1966). "[A]nalysis [of whether the subject matter of a claim is obvious] need not seek out precise

teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l Co. v. Teleflex, Inc.,* 127 S. Ct. 1727, 1740-41 (2007). "If a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR,* 127 S. Ct. at 1740. "Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR,* 127 S. Ct. at 1742. "When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *Id.* In general, a reference will "teach away" if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by applicant. *See In re Gurley,* 27 F.3d 551, 553 (Fed. Cir. 1994).

Applying the preceding legal principles to the Factual Findings in the record of this appeal, we determine that the Examiner has properly established a prima facie case of obviousness which has not been adequately rebutted by Appellant's arguments. As shown by FF (1) listed above, we determine that Minkler teaches the process as claimed in claims 1 and 19, with the exception that the monitoring step relates to total breakage of the strands. We determine that Minkler is silent as to detecting breakage of at least one filament before breakage of the entire yarn (FF (1)). However, as shown by FF (2), (3), (4), and (5) listed above, we determine that the

importance and problem of promptly detecting breakage of at least one filament was well known in the art. Accordingly, as shown by FF (6) and (7) listed above, we determine that one of ordinary skill in this art would have recognized that the breakage of filaments is directly related to the tension of the filaments on the wheel, and monitoring the position of the wheel to determine the tension value would have been directly related to detection of filament breakage. Therefore, we agree with the Examiner that one of ordinary skill in this art, applying the teachings of Harrill, Underwood, and Arterburn, would have incorporated a monitoring sensor for detecting tension of the filaments on the wheel to determine breakage of at least one filament before breakage of the entire yarn in the process of Minkler.

Appellant contends that none of the applied references teach or suggest the monitoring step of claims 1 and 19 (App. Br. 5). This argument is not persuasive for two reasons. First, we determine that Minkler monitors the position of the wheel/shoe, although only for complete breakage of the strand (FF (1)). Second, we determine that Underwood teaches that it is important to promptly detect breakage of at least one filament before the entire strand breaks, and teaches and suggests that the position of the wheel and resultant tension of the filaments is directly related to this detection of breakage (*see* FFs (5), (6), and (7)). Thus, we determine that it would have been well within the ordinary skill in this art to monitor the position of the wheel to determine whether the tension exerted by the multiplicity of filaments falls below a value which would indicate breakage of some portion of the filaments, before breakage of the entire yarn.

Appellant argues that Minkler "teaches away" from the claimed subject matter since the motor of Minkler is only interrupted when the entire strand is detected as broken (App. Br. 6). This argument is not persuasive. We determine that the silence of Minkler regarding partial strand breakout is not a "teaching away" from this subject matter. We determine that the line of development flowing from Minkler (detection of complete strand breakage by monitoring the position of the wheel/shoe) is likely to be productive of the result sought by Appellant, in light of the known and important problem associated with the process of Minkler, i.e., detection of partial breakage of filaments, as taught by the secondary references to Harrill, Underwood, and Arterburn.

Contrary to Appellant's argument (App. Br. 7), we determine that Underwood is not only concerned with the phase angle change, but teaches that the phase angle change is directly related to the tension of the filaments (and the load on the motor, as well as the input current), and the speed (and thus position) of the wheel is controlled by the detection of these values (*see* FFs (5), (6), and (7)).

For the foregoing reasons and those set forth in the Answer, we sustain the Examiner's rejection of the claims on appeal under § 103(a) over Minkler in view of Harrill, Underwood, and Arterburn. The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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